330 Design Documentation, Approval, and Process Review

330.01 General

The project file contains the documentation of planning, project definition, programming, design, approvals, contract assembly, utility relocation, needed right-of-way, advertisement, award, construction, and maintenance of a project. A project file is completed for all project and follows the project until a new project supersedes it.

Design documentation is a part of the project file. It documents design decisions and the design process followed. Design documentation is retained in a permanent retrievable file at a central location in each region. For operational changes and developer projects, design documentation is required and is retained by the region.

330.02 References

Construction Manual, M 41-01, WSDOT

Directional Documents Publication Index, D 00-00, WSDOT

Washington State Department of Transportation Certification Acceptance Approval from FHWA, December 4, 1978, and subsequent revisions

FHWA Washington Stewardship Plan, WSDOT 1993

Master Plan for Limited Access, WSDOT

Advertisement and Award Manual, M 27-02, WSDOT

Plans Preparation Manual, M 22-31, WSDOT

Route Development Plan, WSDOT

State Highway System Plan, WSDOT

Highway Runoff Manual, WSDOT

Executive Order E 1010.00, "Certification of Documents by Licensed Professionals," WSDOT

330.03 Purpose

Design documentation is prepared to record the evaluations by the various disciplines that result in design recommendations. Design assumptions and decisions made prior to and during the project definition phase are included. Changes that occur throughout the project development process are documented. Justification and approvals, if required, are also included.

The design documentation identifies:

- The condition or problem that generated the purpose and need for the project (as noted in the Project Summary)
- The design alternatives considered
- The project design selected
- The work required to satisfy the commitments made in the environmental documents
- The conformity of the selected design to departmental policies and standard practices
- The supporting information for any design variances
- The internal and external coordination

The design documentation is used to:

- Examine estimates of cost
- Prepare access and right of way plans
- Assure that all commitments are provided for in the recommended design
- Plan for maintenance responsibilities as a result of the project
- Provide supporting information for design variances
- Explain design decisions
- Document the project development process and design decisions

- Preserve a record of the project's development for future reference
- Prepare plans, specifications, and estimate (PS&E)

330.04 Project Development

The region initiates the project by preparing the Project Summary package. The project coordination with other disciplines (such as Real Estate Services, Utilities, and Surveying) is started in the project definition phase and continues throughout the project's development. The region coordinates with state and federal resource agencies and local governments to provide and obtain information to assist in developing the project.

The project is developed in accordance with all applicable Directives, Instructional Letters, and manuals as listed in D 00-00; the Master Plan for Limited Access Highways; *State Highway System Plan;* Level of Development Plan; *Route Development Plan;* FHWA Washington Stewardship Plan; and the Project Summary.

The region develops and maintains documentation for each project. This file includes documentation of all work on the project from before the project definition phase through public involvement, environmental action, design decisions, right of way acquisition, and PS&E development. Refer to the *Plans Preparation Manual* for PS&E documentation.

All projects involving FHWA action require NEPA clearance. Environmental action is determined through the Environmental Classification Summary (ECS) form. The environmental approval levels are shown in Figure 330-2.

Upon receipt of the ECS approval, the region proceeds with environmental documentation, including instituting public involvement methods that are appropriate to the magnitude and type of the project. (See Chapter 210.)

The Assistant State Design Engineer works with the regions on project development and conducts process reviews on projects as described in 330.08.

330.05 Project Definition Phase

Project definition is the initial phase of project development. The project definition effort is prompted by the *State Highway System Plan*. The project definition phase consists of determining a preliminary project description, schedule, and estimate. The intent is to make design decisions early in the project development process. During the project definition effort, the *Project Summary* documents are produced.

Project Summary provides information on the results of the project definition phase; links the project to the *Highway System Plan*; and documents the design decisions, the environmental classification, and agency coordination. The Project Summary is developed before the project is funded for construction. The Project Summary consists of the *Environmental Review Summary, Design Decisions Summary,* and *Project Definition*.

Environmental Review Summary (ERS) lists the environmental permits and approvals that will be required, environmental classifications, and environmental considerations. This form lists requirements by environmental and permitting agencies. If there is a change in project definition, the information in the ERS must be reviewed and changed to match the new project definition. The ERS is prepared during the project definition effort. The ERS is approved by the region.

Design Decisions Summary (DDS) states the roadway geometrics, design deviations, evaluate upgrades (EUs), other roadway features, and any design decisions made during the project definition phase of a project. The information contained in this form is compiled from various databases of departmental information, field data collection, and evaluations made in development of the *Project Definition* and the ERS. To sign the Design Decisions Summary, the region must be comfortable that there will be no significant change in the project definition or estimated cost. Design decisions may be revised throughout the project development process based on continuing evaluations.

The DDS is approved by the Assistant State Design Engineer for new construction and reconstruction projects on the Interstate System. The regional design authority approves the DDS for all other types of projects. (See Figure 330-1)

Project Definition (PD) identifies the various disciplines and design elements that will be encountered in project development. The Project Definition states the needs, the purpose of the project, program categories, and the design matrices that were used to develop the Project Definition. This information determines the level of documentation and evaluation that is needed for approval of the design. The Project Summary is completed in the project definition phase.

Once the project has been formally adopted into the WSDOT operating program, project development continues. Design of projects is further refined by a project manager through an interdisciplinary team process. Projects continue with the development of environmental and design documentation.

330.06 Design Documentation

(1) FHWA Requirements

For projects on the Interstate System, the level of FHWA oversight varies according to the type of project, the agency doing the work, and the funding source. See Figure 330-1 for details.

FHWA operational acceptance is required for any new or revised access point on the Interstate System, regardless of funding. (See Chapter 1425.)

Documentation for projects requiring FHWA review and approval is submitted through the Olympia Service Center (OSC) Design Office. Include the following items if applicable to the project:

- Project Definition (form) (PD)
- Environmental Review Summary (form) (ERS)
- Design Decisions Summary (form) (DDS)
- Design Variance Inventory (form) with support information for EUs and deviations
- Cost estimate
- NEPA documentation
- Design Clear Zone Inventory (form)
- Interchange plans, and profiles (and roadway sections if appropriate)
- Traffic projections and analysis
- Accident analysis
- The report requesting new or revised access points

The forms listed above (Project Definition, Environmental Review Summary, Design Decisions Summary) are generated by the Project Summary database. Specific on-line instructions for filling them out are contained in the database.

(2) Design Documents

The design portion of the project file preserves the decision documents generated during the design process. A summary (list) of these documents is recommended because projects vary in scope and the documents applicable to the project vary accordingly.

The design documents commonly included in the project file for all but the simplest projects are listed below. The ERS, PD, and DDS forms are in the Project Summary database which includes on-line instructions.

- Documentation of any design decision to do more, or less, than WSDOT guidance indicates and documentation of design decisions for components not addressed by WSDOT guidance. (These may be separate documents or portions of the documents listed below.)
- Environmental Review Summary (ERS form)
- Project Definition (PD form)
- Design Decisions Summary (DDS form)
- Corridor or project analysis. See Chapter 325 for definition and Figures 330-5a and 5b.
- Design Variance Inventory (form) with support information for EUs and deviations
- Cost Estimate
- Design Clear Zone Inventory (form)

- Copies of interchange plans, intersection plans, and profiles (and roadway sections if appropriate)
- Right of way plans
- Monumentation Map
- SEPA and NEPA documentation
- Work Zone Traffic Control Strategy
- Other project components: Provide documentation in the project file as detailed in the applicable *Design Manual* chapters. Documentation is not required for components not related to the project.

The Design Variance Inventory is required for NHS roadway preservation projects only. This form lists all design exceptions, evaluate upgrades not upgraded to the applicable design level, and deviations.

The Project Definition and Environmental Review Summary are required for all projects.

The Design Decisions Summary form is not required for the following project types unless they involve reconstructing the lanes, shoulders, or fill slopes. Since these project types are not included in the design matrices, evaluate them with respect to modified design level (M) for non-NHS routes and full design level (F) for all others.

- Bridge painting
- Crushing and stockpiling
- Pit site reclamation
- Lane marker replacement
- Guide post replacement
- Signal rephasing
- Signal upgrade
- Seismic retrofit
- Bridge joint repair
- Navigation light replacement
- Signing upgrade
- Illumination Upgrade
- Rumble Strips
- Electrical upgrades
- Major Drainage
- Slope Stability*
- Bridge scour
- Fish passage
- Other projects as approved by OSC Design

*Address rock scour within the project limits whenever feasible.

(3) Certification of Documents by Licensed Professionals

All original technical documents must bear the certification of the responsible licensee. See Executive Order E 1010.00.

(4) Deviation and Evaluate Upgrade Documentation

The *Design Variance Inventory* (a form), *DE*, *EU*, and *deviations* are introduced in Chapter 325.

To prepare a deviation request, or document an EU, use the list in Figure 330-6 as a general guide for the sequence of the content. The list is not all-inclusive of potential content and it might include suggested topics that do not apply to a particular project. Each deviation request will be unique. Sample deviations and EUs are on the Internet at www.wsdot.wa.gov/eesc/CAE/pse/

Documentation of a deviation must contain justification and must be approved at the appropriate administrative level as shown in Figure 330-1. When applying for deviation approval, it is necessary to provide two explanations. The first explains why the WSDOT guidance was not or cannot be used. The second provides the justification for the design that is proposed. Justification for a deviation must be supported by at least two of the following:

- Accident history or potential
- Benefit/cost analysis
- Engineering judgment
- Environmental issues
- Route continuity

An element of engineering judgment might be references to other publications.

Once a deviation is approved, it applies to that project only. When a new project is programmed at the same location, the subject design element must be reevaluated and either (1) the subject design element is rebuilt to meet or exceed the applicable design level, or (2) a new, approved deviation is preserved in the design file for the new project.

330.07 Design Approval

Design Approval is the approval of the design file. When the design file is complete, the region takes an action to make an approval that becomes part of the file. Figure 330-1 identifies the approval levels for design, evaluate upgrades (EUs), and deviations. The following items must be approved prior to design approval:

- Required environmental documentation (NEPA, SEPA)
- Project Summary (includes Project Definition, Design Decisions Summary, and Environmental Review Summary)
- Design Variance Inventory form (includes evaluate upgrades and deviations) for NHS, deviations and EUs for non-NHS
- Cost estimate

See Figures 330-1 through 4 for review and approval levels for project design and PS&E documents. Figures 330-2, 330-3, and 330-4 are summaries of information provided in other WSDOT documents.

330.08 Process Review

The process review is done to provide reasonable assurance that projects are prepared in compliance with established standards and procedures and that adequate records exist to show compliance with state and federal requirements.

The design and PS&E process review is performed in each region at least once each year by the OSC Project Development Branch. Four documents are used in the review process: the Design Review Check List, PS&E Review Check List, Design Review Summary, and PS&E Review Summary. These are generic forms used for all project reviews. Copies of these working documents are available for reference when assembling project documentation. OSC Design Office, Project Development maintains current copies on the Internet. For paper copies or a specific electronic address contact the OSC Project Development Branch.

Each project selected for review is examined completely and systematically beginning with the project definition and the project summary phase and continuing through contract plans and (when available) construction records and change orders. Projects are normally selected after contract award. For projects having major traffic design elements, the OSC Traffic Operations personnel are involved in the review. The WSDOT process reviews may be held in conjunction with FHWA process reviews.

The OSC Project Development Branch schedules the process review and coordinates it with the region. Notification of the scheduled process review is sent to FHWA for their information and for use in coordinating a joint process review.

A process review follows this general agenda:

1. Review team meets with regional personnel to discuss the object of the review.
2. Review team reviews the design and PS&E documents, and the construction documents and change orders if available, using the check lists.
3. Review team meets with regional personnel to ask questions and clarify issues that have arisen.
4. Review team meets with regional personnel to discuss findings.
5. Review team submits a draft report to the region for comments and input.
6. If the review of a project shows a serious discrepancy, the regional design authority is asked to report the steps that will be taken to correct the deficiency.
7. The process review summary forms are completed.

8. The summary forms and check lists are evaluated by the State Design Engineer.
9. The findings and recommendations of the State Design Engineer are forwarded to the regional design authority, for action and/or information, within 30 days of the review.

P65:DP/DMM

Project Design	FHWA Oversight Level	Deviation and Corridor/Project Approval(f)	EU Approval	Design Approval
Interstate				
New/Reconstruction(e) • Federal funds • No federal funds	 (a) (b)	FHWA	Region	FHWA
Intelligent Transportation System (ITS) over $1 million	(c)	OSC Design	Region	OSC Design
All Other(d) • Federal funds • State funds • Local agency funds	 (c) (c) (b)	OSC Design	Region	Region
NHS				
All	(c)	OSC Design	Region	Region
Non-NHS				
New/Reconstruction	N/A	OSC Design	Region	Region
All Other	N/A	Region	Region	Region

FHWA = Federal Highway Administration
OSC = Olympia Service Center

(a) Requires FHWA review and approval (full oversight) of design and PS&E submitted by OSC Design.

(b) To determine the appropriate oversight level, FHWA reviews the Project Summary (or other programming document) submitted by OSC Design or by TransAid through OSC Design.

(c) FHWA oversight is accomplished by process review. (See 330.08.)

(d) Reduction of through lane or shoulder widths (regardless of funding) requires FHWA review and approval of the proposal.

(e) See Chapter 325 for definition.

(f) These approval levels also apply to deviation processing for local agency work on a state highway.

Design Approval Level
Figure 330-1

Item	Region		OSC		FHWA	
	Review	Approval	Review	Approval	Review	Approval
Program Development						
Work Order Authorization				X		X [1]
Public Hearings						
Corridor Plan [13]				X		
Design Summary [14]				X		
Access Hearing Plan [14]				X		
Access Findings and Order [15]				X		
Environmental By Classification						
Summary (ECS) NEPA						X
Class I NEPA (EIS)			X			X
Class I SEPA (EIS)				X		
Class II NEPA *Programmatical Categorical Exclusion (CE)		X				
Class II NEPA — Documented Categorical Exclusion (CE)	X					X
Class II SEPA — Categorical Exemption (CE)		X				
Class III NEPA — Environmental Assessment (EA)			X			X
SEPA Check List		X				

*If on the preapproved list.

Notes:
X Normal procedure
[1] Federal aid projects only
[3] Applies to new/reconstruction projects on Interstate routes
[13] Assistant Secretary for Environmental and Engineering Service Center approval
[14] State Design Engineer approval
[15] Refer to Chapter 210 for approval requirements

Reviews and Approvals
Figure 330-2

Item	Region		OSC		FHWA	
	R	Approval	Review	Approval	Review	Approval
Design						
Design Deviations		[2]		[2]		[2]
Experimental Features				X		X [3]
Environmental Review Summary		X				
Final Design Decisions Summary		X		X [3]		
Final Project Definition				X [4]		
Access Point Decision Report			X			X
Non-Interstate Interchange Access Point Report				X		
Interchange Plans [12]		X		X [3]		
Intersection Plans [12]		X		X [3]		
Right of Way Plans		[13]		X		
Monumentation Map		X				
Materials Source Report				X [5]		
Pavement Determination Report				X [5]		
Project Design Approval		[2]		[2]		[2]
Resurfacing Report				X [5]		
Signal Permits		X [6]				
Geotechnical Report				X [5]		
Tied Bids		X				X [3]
Bridge Design Plans (Bridge Layout)		X		X		
Hydraulic Report		[7]	X [8]			
Preliminary Signalization Plans			X			
Rest Area Plans				X		
Roadside Restoration Plans		X [9]		X [10]		
Structures Requiring TS&L's				X		X
Wetland Mitigation Plans		X		X		
Wetland Mitigation Planting Plans		X [9][11]		X [10]		
Grading Plans		X [9][11]		X [10]		

Reviews and Approvals, Design
Figure 330-3a

Notes:

X Normal procedure
[2] Refer to Figure 330-1 for design approval level
[3] Applies to new/reconstruction projects on Interstate routes
[4] OSC Program Management
[5] Submit to OSC Materials Branch for review and approval
[6] Approved by Regional Administrator
[7] See M 23-03, Hydraulics Manual for additional guidance
[8] Region to submit Hydraulic Report. Refer to Hydraulics Manual
[9] Applies only to regions with a Landscape Architect
[10] Applies only to regions without a Landscape Architect
[11] Approved by Regional Landscape Architect
[12] Include channelization details
[13] Certified by the responsible professional licensee

Reviews and Approvals, Design (continued)
Figure 330-3b

Item	Interstate New/ Reconstruction	NHS and Non-NHS
Minority/training goals* **	OSC(a)	OSC(a)
Right of way certification for federal aid projects	OSC(b)	OSC(b)
Right of way certification for state funded projects	Region(b)	Region(b)
Railroad agreements	OSC(c)	OSC(c)
Work performed for public or private entities*	OSC[1][5]	Region[1][5]
State force work*	FHWA[2](d)	OSC[2](c)(d)
Use of state furnished stockpiled materials*	FHWA[3]	Region[3]
Stockpiling materials for future projects*	FHWA[3]	Region[3]
Work order authorization	OSC[4](d)	OSC[4](d)
Ultimate reclamation plan approval through DNR	Region	Region
Proprietary item use*	FHWA[3]	OSC[5](c)
Mandatory material sources and/or waste sites*	FHWA[3]	Region[3]
Nonstandard bid item use*	Region	Region
Incentive provisions	FHWA	OSC(e)
Nonstandard time for completion liquidated damages*	FHWA(e)	OSC(e)
Interim liquidated damages*	OSC(f)	OSC(f)

Notes:
[1] This work requires a written agreement.
[2] Use of state forces is subject to $50,000 limitation as stipulated in RCWs 47.28.030 and 47.28.035.
[3] Applies only to federal aid projects. However, document for all projects.
[4] Prior FHWA funding approval required for federal aid projects.
[5] Region approval subject to $250,000 limitation.

Regional or Olympia Service Center approval authority:
(a) Office of Equal Opportunity
(b) Real Estate Services
(c) Design Office
(d) Program Management Office
(e) Construction Office
(f) Transportation Data Office

References:
**Plans Preparation Manual*
***Advertisement and Award Manual*

PS&E Process Approvals
Figure 330-4

Project Analysis

L-0000 SR A

Yodelin Hill Climbing Lane SR A MP B to MP C

Overview

High truck volumes and steep grades are adversely impacting traffic flows and safety on this section of highway. The purpose of this project is to increase traffic flows and safety by adding a climbing lane.

For this NHS rural mobility project, the Design Matrix calls for full design level with an option to use modified design level based on a corridor or project analysis. In *Design Manual* Chapter 440, the ADT of 6300, DHV of 730, and truck percentage of 18% in design year 2016 indicates design class P-2 multilane. Considering the following justification, the region proposes to design this project to the modified design level MDL-14 with a truck climbing lane.

A climbing lane warrant has been met.

Route Description

This section of SR A parallels a mountain stream and is located in steep mountainous terrain. Adjacent roadway sections consist of two 11.3 ft lanes with 4 ft shoulders. Fill slopes generally range between 3H:1V and 4H:1V as do ditch inslopes. The posted speed is 60 mph in both directions.

Comparison

	Existing Conditions	Modified Design Level (MDL-14)	Full Design Level (P-2)	Proposed (MDL-14)
Fill slopes	3H:1V to 4H:1V	4H:1V	6H:1V	4H:1V
Lane Width	11.3 ft	12 ft	12 ft	12 ft
No. Thru. Lanes	2	2+1	4	2+1
Shoulder Width	4 ft	4 ft	10 ft	4 ft
Median Width	none	none	18	none

The use of full design level would require a wider roadway which would in turn require significant impacts to the stream, very high and lengthy rock cut, additional right of way including acquisition of numerous cabins, and utility impacts. The cost to construct this section to full design level is approximately $6 million more than to construct to modified design level with an additional climbing lane.

Adding a fourth lane throughout this narrow corridor would have minimal benefits to the traveling public. There is no proposed improvement in the 20 year System Plan to make either this section, or adjacent sections of highway, four lanes.

Sample Project Analysis

Figure 330-5a

Accidents

The accident history from April 1993 through March 1996 indicates 28 accidents resulting in 1 fatality, 16 injuries, and $392,100 in property damage.

14 of the 28 accidents, including the fatality, occurred while passing uphill traffic. Seven other accidents occurred during turning maneuvers at four different locations throughout the project.

Addition of the truck climbing lane should reduce the number and severity of accidents on this section of roadway. The additional fourth lane throughout would probably not significantly reduce the number or severity of accidents.

Summary

Considering route continuity, environmental constrains, additional cost, and minimal benefit, the region feels constructing to full design level is not justified. Therefore, the region proposes to construct this project to modified design level.

_____	_____	_____	_____
Regional Concurrence	Date	OSC Design Approval	Date

Sample Project Analysis
Figure 330-5b

1. Overview
   (a) The safety or improvement need that the project is to meet
   (b) Description of the project as a whole
   (c) Highway classification and applicable Design Matrix
   (d) Funding sources
   (e) Evidence of deviations approved for previous projects (same location)
2. Design Alternatives in Question
   (a) Existing Conditions and Design Data
      - Location in question
      - Rural, urban, or developing
      - Route development plan
      - Environmental issues
      - Right of way issues
      - Number of lanes and existing geometrics
      - Present and 20 year projected ADT
      - Speed limit and operating speed
      - Percentage of trucks

   (b) Accident Summary and Analysis
   (c) Design Using the *Design Manual* Guidance
      - Description
      - Cost estimate
      - B/C ratio
      - Advantages and disadvantages
      - Reasons for considering other designs

   (d) Other Alternatives
      - Description
      - Cost estimate
      - B/C ratio
      - Advantages and disadvantages
      - Reasons for rejection

   (e) Selected design requiring documentation as a deviation (or justification to file)
      - Description
      - Cost estimate
      - B/C ratio
      - Advantages and disadvantages
      - Justification - see 330.06(4)
3. Concurrences, Approvals, and Professional Seals

Deviation and Evaluate Upgrade Request/Documentation Content List
Figure 330-6